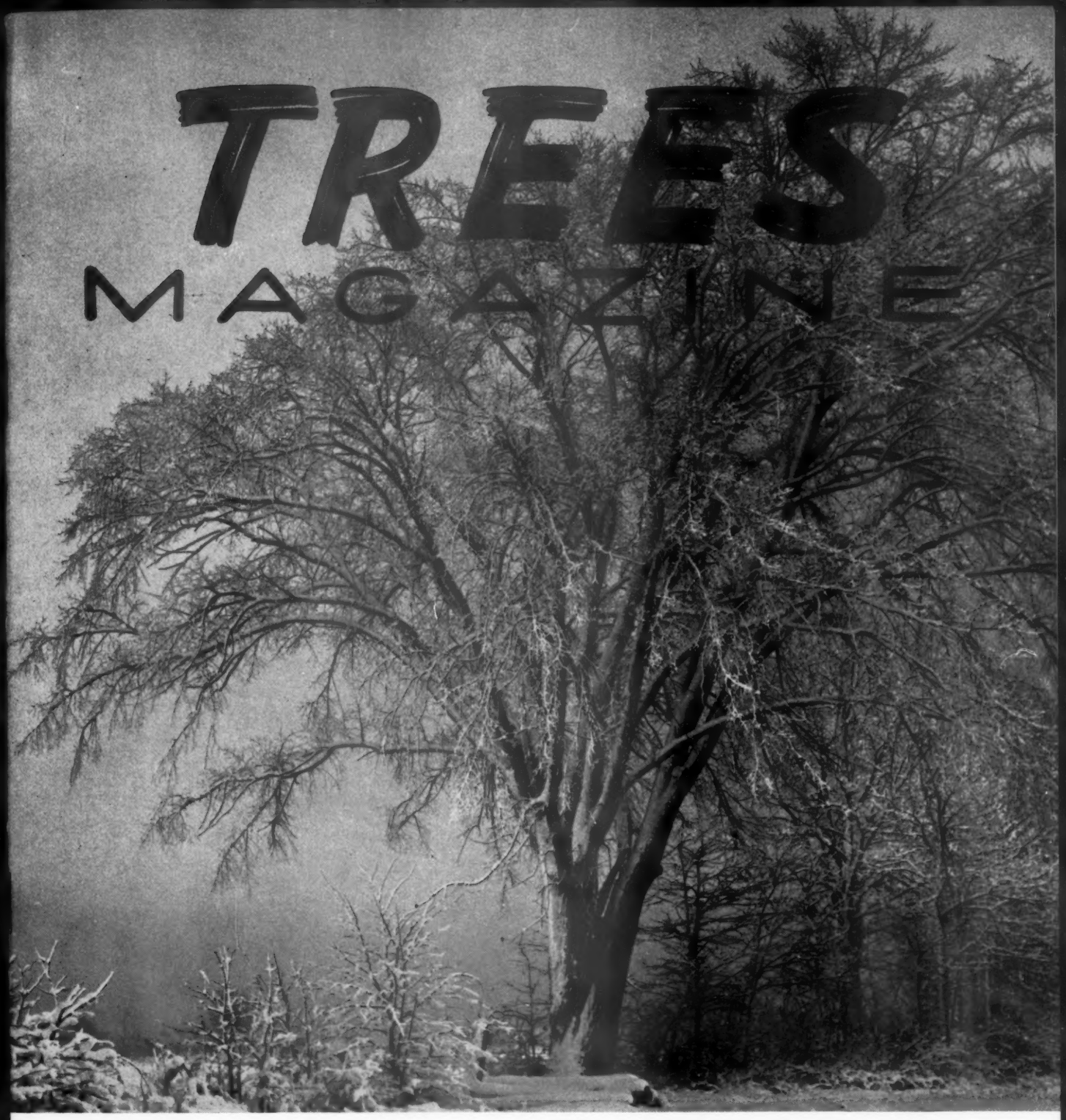
TREES MAGAZINE



Brrrh! — and Another Very Merry Christmas And Happy New Year From The Rancho!

NATIONAL ARBORIST ASSOCIATION, CINCINNATI — JANUARY 30, 31, 1956

Plant Label Problems And New Designs — ***J. R. Schramm***

Better Trees With The Bolivar Pit — ***F. L. Steve O'Rourke***

Nov.-Dec., 1955 *The Journal of American Arboriculture* Vol. 16. No. 1

McCullochs cut fastest! *They're lightest, too!*

This new McCulloch Super 33 chain saw outperforms any other saw of its size, weight, or price. It's your best dollar value in a small, high-powered, light-weight saw. (22 pounds with blade and chain; $237.50 up)

For cutting sawlogs, pulpwood, firewood, or posts; for tending tree farms, timber acreage, or orchards; for woodcutting of any kind, you can't beat McCulloch gasoline-powered saws!

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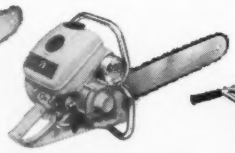

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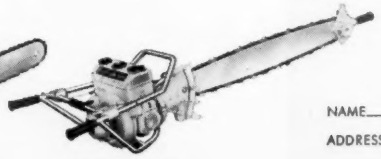

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ALONG THE WAY With .... EDW. SCANLON

■ **Another year has passed and ANOTHER CHRISTMAS is near—so, again with GREAT PLEASURE WE AT THE RANCHO extend to you and yours our BEST WISHES FOR A MERRY CHRISTMAS and the best of LUCK AND HEALTH FOR THE NEW YEAR.**

■ As of Nov. 14 you COULDN'T SEE 50 FEET thru the Rancho nursery — the foliage was STILL VERY HEAVY. Petunias and roses still blooming and ONLY ONE good heavy frost.

■ **The COLOR in the CHERRYBARK MAPLE (A. griseum) WAS GORGEOUS, or is, some are STILL TURNING. Its AS SPECTACULAR A RED as REVLONS "CHERRIES A LA MODE"—or to be practical, AS NYSSA.**

■ NEW CASTLE, Pa., HAS RECOGNIZED the long service of its CITY FORESTER by naming a new park in his honor—OWEN PENFIELD FOX PARK—This is A SWITCH—generally they GET THEM IN and then do their best to TEAR THEM DOWN.

■ **The NEW YORK STATE ARBORISTS ASS'N is again sponsoring its ANNUAL ARBORISTS SCHOOL in cooperation with the STATE COLLEGE OF AGRICULTURE at Cornell. Dates are JAN. 16 AND 17, HOTEL ONANDAGA, Syracuse.**

■ WHAT HAPPENED to THANKSGIVING? Ever since the ROOSEVELT EFFORT to switch it TO ARMISTICE DAY it has been STEADILY DISAPPEARING into the COMMERCIAL AURA that is CHEAPENING XMAS.

■ **SORRY I MISSED the NEW JERSEY FEDERATION MEETING at Atlantic City. Was in PHILADELPHIA FOR FOUR DAYS—had to go HOME FRIDAY and RETURN SATURDAY, but "TAILORED TREE" complications set in and I HAD TO STICK close to the RANCHO.**

■ If you HAVEN'T ALREADY OBTAINED a copy of the proceedings of the FIRST STREET TREE AND UTILITY CONFERENCE, you should. It is an EXTREMELY VALUABLE BOOK giving the BASIC REASONS for TREES, STREET LIGHTS, AND OVERHEAD WIRES, with means whereby they CAN LIVE IN HARMONY. It will pave the way a COMPLETE REEVALUATION of the principles of TREE USE ON STREETS. Order a copy from the EDISON ELECTRIC INSTITUTE, 420 LEXINGTON AVE., NEW YORK CITY—$2.40 per copy—quantity prices on request.

■ **BILL JOHNSON says I GOOFED in the caption of the picture of HIS SPRAYER in the LAST ISSUE. 1st the sprayer is a Hardie L-80 (but they DON'T ADVERTISE IN TREES, Bill) and I said it was an OLIVER (NEITHER DO THEY), 2nd the tank is 50 gallon not 100—well ANYWAY BILL YOUR NAME was spelled correctly.**

■ If anyone out MONTANA OR IDAHO way, or in the range of ACER GRANDIDENTATUM knows where I can GET SOME SEED, about five pounds, I WILL APPRECIATE the information. This is a FORM OF SUGAR MAPLE, grows in a TIGHT PYRAMIDAL FORM, and colors well in the fall. A REAL FINE PROSPECTIVE STREET TREE with a DRY SOIL HERITAGE that merits a THOROUGH TRIAL.

■ **You should see what BEAUTIFUL BONSAI the MT. ATLAS BLUE CEDAR (Cedrus Atlantica glauca) makes. They GROW IN ALL DIRECTIONS in the first two or three years and can BE EASILY TRAINED into very interesting forms. Their COLOR IS SUPERB.**

■ A short time ago BUCK WEAVER and JOHN FLORIAN dropped into THE RANCHO. Now I know where the NAME "PINCH BOTTLE" COMES FROM—they originated it by PINCHING A BOTTLE so hard FOR THE LAST DROP.

■ **DON'T FORGET to send in your CHANGE OF ADDRESS when you move or GET EVICTED.**

■ Is DICK WALTERS coming back from Europe or did he decide it was probably SAFER TO STAY even that close TO THE IRON CURTAIN. "BROOMSTICKS" yet, ye calls MY PET TREES —Poww! I HOPE the commies get him.

■ **CHARLIE IRISH is on the mend and FEELING BETTER since his hospital siege.**

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Vol. 16 Bi-Monthly No. 1

Subscription Price $2.00 Per Year (Foreign $2.50) 35 Cents Per Copy

TREES MAGAZINE

7621 Lewis Rd., Olmsted Falls, Ohio

The Editors of TREES invite discussions, comments and all types of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.

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Topiary Wanted

"Wanted Topiary work in the form of birds, preferably yews, for shipment to California. Must be from certified Japanese beetle free areas. When writing, quote price and state size, condition and style. Box No. (DMS) Trees."

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TREES Magazine is a bi-monthly Journal published at Olmsted Falls, Ohio, by Edward H. Scanlon, and is devoted to the furtherance of the technical and business administration of Trees (Street and Ornamental); Parks (Municipal and National); and Forests (State, National and Private), in the U. S. Scanlon Publishing Co., 7621 Lewis Rd., Olmsted Falls, Ohio. Subscription by mail $2 per year; outside United States, $2.50. Advertising rates upon inquiry. Closing date for advertising copy—10th of month preceding date of issue. Unsolicited manuscripts must be accompanied by return postage

Nov.-Dec., 1955 **Journal of the National Arborist Association** Vol. 16. No. 1

EDWARD H. SCANLON, Editor
7621 Lewis Rd., Olmsted Falls, Ohio
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"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; A COUNTRY WITHOUT TREES IS HOPELESS."

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Out On A Limb

WHAT PRICE PUBLIC SHADE?

Did you ever stop to think of the terrific price a municipality pays for a commodity that is little used and as little needed as shade along a street. It probably gives some people a nice stuffy feeling to note huge misplaced forest monsters lining street after street, with concentrated trouble, and yawn that this is tradition—these people are *kidding themselves*—like the heirs to a huge old mansion who couldn't afford to maintain it in it full glory, so they settled by shutting off all but one room. They weren't kidding anyone but themselves. So it is where street trees are planted for fast growth and shade. What city can afford these misused, out-of-place giants. A lot of them are certainly finding out now the cost of fast public shade.

A number of things have led to the present dire condition that prevails on streetsides—1) the inherent desire of many people to do things the easy way. This resulted in the use of easy to grow weed trees. They grew fast and they grew thick—is it any wonder so many cities were given the title of "The Forest City," and actually the misnomer of City Forester has been literally correct because the principal occupation of most has been logging. 2) Lack of qualified people with vision, imagination and the intestinal fortitude to stand up and fight to do the job the way it should be done—it seems as if it is easier to do it wrong and of course that way required little knowledge and a minimum of political conflict. 3) Lack of a good selection of trees and the development of necessary forms. 4) An entirely incorrect evaluation of the all around function of streetside trees. 5) and lastly the all important lack of funds. Few cities appropriate any funds for this important public service. Those that do rarely approach the subject intelligently and supply sufficient funds to do a good job.

The old idea that trees along streets were planted solely to provide shade was a narrow-minded oversight if there ever was one, and a very expensive one to boot. Shade may have been needed in the horse and buggy days, but certainly not in such copious quantities as that supplied by planting two trees in front of every property—elms, silver maples, pin oaks, sycamores sixteen to twenty or twenty-five feet apart.

The day of reckoning, "the end of the line" had to come for these giants just as it does for everything, and that is where the sad part of the story comes in. It is at the "end of the line" that we find out how high the cost of an oversupply of a doubtful commodity—shade on city streets.

It costs a city on an average about $60.00 for the removal of every tree. This figure however does not tell the story of the cost involved in removing the forest giants, because many juvenile forest giants are removed at the first sign of trouble and therefore reduce the average figure. The cost on the big ones can go as high as six or seven hundred dollars and run around two or three hundred. This is a big price to pay for mistakes and a misconception of the function of street trees. They should be widely spaced individual things of beauty that enhance and impart dignity and stability and character to the street and city, because they fit.

Proceedings of the First Street Tree and Utility Conference Available

Last March the first step toward the solution of the age old conflicts between trees, overhead wires and street lights, was effected when representatives of the three industries sat down together in a friendly spirit of appreciation for one another's problems. Many excellent papers dealing with the problems of each industry and the manner in which they could correlate their activities for the creation of harmony and a reduction of conflict, were given. Now the proceedings of this epochal meeting have been published and are available to all interested persons or organizations.

Our Streets can be Beautiful and Useful
Proceedings of the
FIRST STREET TREE and UTILITY CONFERENCE
Cleveland, Ohio
March 3-4, 1957

Attractive Green and Black cover of first Street Tree and Utility Conference Proceedings.

The cost of individual copies is $2.40 while quantity prices can be obtained from Mr. W. Coleman of the Edison Electric Institute, 420 Lexington Ave., New York.

The meetting was a cooperative accomplishment of three national organizations: the National Shade Tree Conference(Street Tree Selection Committee, Edward H. Scanlon, Chairman); the Edison Electric Institute (Transmission and Distribution Committee, John W. Anderson, Chairman); and the Illuminating Engineering Society (Street Lighting Committee, Kirk M. Reid, Chairman). The first meeting was held in Cleveland at the Wade Park Manor, March 3-4. A second meeting is scheduled for March 7, 8, 1957 in Cleveland.

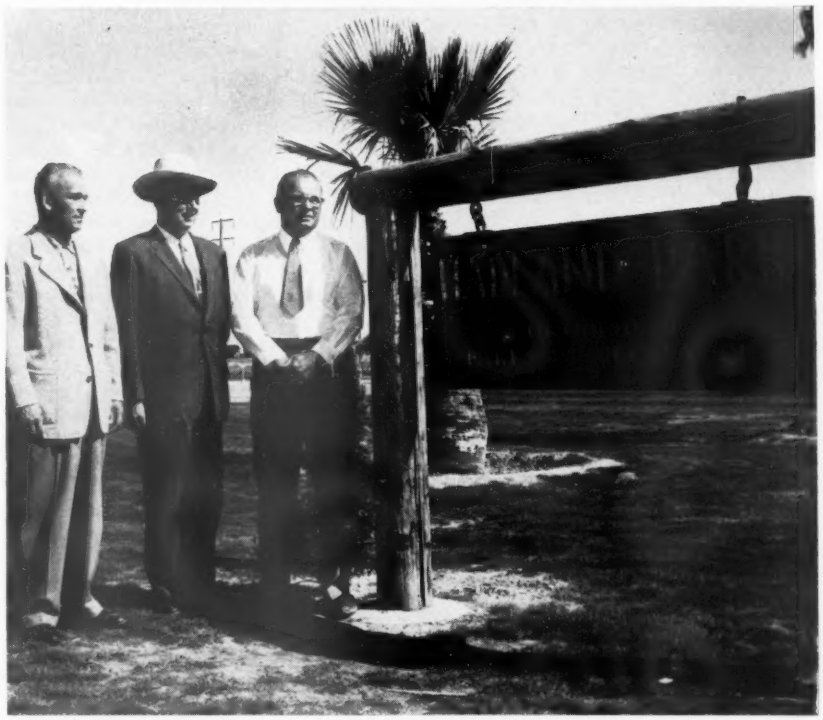
Trees Increase Threat of Fire Over Holidays

The Christmas tree, center of holiday festivities in most American homes, can easily become the center of tragedy, warns the National Board of Fire Underwriters. Because a fir tree is filled with pitch and resin, it is one of the most combustible objects known—and once ignited, it burns so rapidly that it is virtually impossible to extinguish.

"Keep Christmas merry," advises the Board. "Follow these safety rules and avoid a fire in your home during the Christmas season."

1. Choose a small tree. It's less dangerous than a large one.
2. Don't set it up until a few days before Christmas. Until then, keep it outdoors.
3. Place it in the coolest part of the house, away from fireplaces or radiators. And don't let it block an exit.
4. Stand it in water, or use a live tree planted in a tub of earth.
5. Never use cotton or paper for decoration on or around the tree.
6. Do not put electric trains under the tree.
7. Use only electric lights, never candles, and see that the wires are not frayed. Be sure the wiring sets for lights you choose are marked as having been inspected by Underwriters' Laboratories, Inc.
8. Provide a switch some distance from the tree for turning tree lights on and off. Don't plug or unplug them beneath the tree.
9. Throw away all gift wrappings as soon as the presents have been opened; don't let them pile up near the tree.
10. Do not leave tree lights burning when no one is home.
11. If needles near the lights turn brown, remove the lights.
12. When needles start to fall, take the tree down and discard it.

Long Time Member of the National Shade Tree Conference Honored by the City of Las Vegas, Nevada



Kenneth Hadland, Superintendent of Parks, Las Vegas, Nevada, has been honored by the city of Las Vegas upon the completion of his tenth year as Park Superintendent, in having Hadland Park named and dedicated in commemoration of his anniversary.

Kenneth Hadland, the genial, enthusiastic individual who has made a desert community an outstanding example of man's constant battle with the forces of nature in providing parks, golf courses, and street trees for the city has well earned this distinctive honor.

Hadland Park comprises twelve acres of land upon which have been developed hard-ball and soft-ball diamonds, picnic areas and barbecue pits, a fully equipped children's playground and a bowling green. It is interesting to note that the bowling green is the first and only bowling green to be installed in the state of Nevada.

A Reexamination of Plant Label Problems With Some New Designs

By J. R. SCHRAMM

The Morris Arboretum

(Editor's Note: This article, in two parts, is reproduced with permission of the author, Dr. J. R. Schramm. It appeared in the Bulletin of the Morris Arboretum and its value to the many people interested in the proper labeling of trees in public parks and grounds seemed to warrant its reproduction in TREES Magazine. The labels described are not available commercially, nor are they for sale at the Arboretum)

Fig. 14. Design of tree label attached to bark by screws anchored wholly in the cork. For details see Fig. 21.

For the experimenter, propagator, nurseryman, etc., for whom labels serve usually as short-time on-the-spot records of plants in the greenhouse, frames, nursery, or field, existing types fulfill essential needs. On the other hand, for permanent plant collections serving public educational objectives, labeling presents special problems not all of which have been satisfactorily resolved. Faced some years ago with the task of relabeling many plants, especially at the Morris Arboretum, the matter was reexamined with some care with the result that a series of labels was designed and fabricated. Large numbers of these have now been in use for from eight to fifteen years—long enough to assess their performance and render a report. In doing so no claim is made that all the problems have been solved. It is hoped, however, that a modest contribution has been made toward the solution of at least some of them.

It probably is not difficult to reach substantial agreement on the attributes the ideal label should have. Doubtless these would be something as follows: (1) Visibility; (2) legibility; (3) permanence; (4) absence of injurious effects on the plants; (5) low initial cost; (6) low maintenance cost; (7) absence of appreciable intrinsic value tempting to the thief; (8) attractiveness.

Obviously some of these attributes are inter-related, such as initial cost, permanence, and maintenance cost. Low initial cost may not be economical in the long run if achieved by sacrificing long life. To keep public educational collections adequately labeled is at best difficult. If because of short life, early deterioration, or other shortcomings labels require frequent replacement, refurbishing, or other unduly time-consuming and costly attention, sooner or later the labeling of collections is likely to fall into disrepair. And because of the cost and time involved, restoring it to good order may suffer protracted delays. Many valuable collections have experienced these ups and downs in labeling. In the label designs to be discussed, initial cost has definitely not been overriding consideration. Rather, low cost over the years and the optimum of desirable attributes in general have been the prime objectives.

Since the problem of the Morris Arboretum concerned mainly woody plants, the designs are primarily for trees and shrubs. However, some attention was devoted also to permanent greenhouse collections, special out-door plantings, and a variety of situations requiring appropriate adaptations. In all the labels the materials are the same—stainless steel and black locust wood *(Robinia pseudoacacia)*, one or the other or both being used in any given design as required. These materials were chosen because of proved long-lasting qualities. The designs of the labels are such that the wood can be replaced by metal or plastics if desired. In the absence of long successful experience with plastics out of doors, the Arboretum thus far has not used them.

Details of materials, fabrication, and equipment employed in producing the various types of labels will be furnished in a concluding appendix. But meanwhile the invaluable services of Mr. George Campbell of the Morris Arboretum are gratefully recorded. The successful development of fabricating methods and devices is largely the result of his ingenuity and skill. In addition, Mr. Campbell has contributed valuable features in the label designs.

The labels to be described are the following:

Tree trunk label with screw attachment.

Tree trunk label with expanding band attachment.

Hanging label for shrubs, small trees, woody vines, etc.

Removable standard label anchored in the ground for situations where plant-attached labels are not practical; also for special display collections.

Label for greenhouse, rock garden, bedding, etc., plants.

I. TREE TRUNK LABELING

The labels designed for tree trunks are of wood, and are of two types as regards mode of attachment. (1) For trees with sufficiently thick and firm cork (e.g., black walnut), screws penetrating the cork no deeper than the cork cambium fasten the label to the trunk (Fig. 14). (2) For trees with shallow cork (e.g., Fagus, Abies) or with loose shedding cork (e.g., some hickories), nothing is driven into the trunk; instead, label attachment is effected by means of a self-adjusting band encircling the trunk (Figs. 15 and 16).

These designs are the outgrowth of an attempt to bring into harmony the mode of attachment with the developmental anatomy of tree trunks. The well known difficulties experienced with tree labels (overgrowing of the label by the growing trunk: pushing over the heads of attaching screws or nails; initiation of decay; etc.) spring from a conflict between the mode of attachment and the growth habits and processes of the trunk. Since interest in tree labels is not confined to those thoroughly conversant with the precise nature of these processes, a brief review of the essential

Fig. 15 and 16. Design of tree label attached to trunk by automatically expanding band. The photographs show respectively the two ends of the functioning band assembly. For details see Fig. 22.

relevant facts of trunk growth may not be out of place.

A. Development Anatomy of Growing Tree Trunk

For our purposes the trunk falls naturally into the following main regions (Fig. 17): (1) the central cylinder of wood, surrounded by (2) the bark, with (3) the all-important cambium constituting the thin boundry between the first two.

By way of locating these three areas in everyday experience it may be recalled that when the bark is peeled from a trunk the separation usually occurs at or approximately at the cambium. The same discovery, albeit with more thrill, has been made by anyone who in mid spring has fashioned a whistle out of a willow, pawpaw, or other suitable twig. The gentle pounding of the peripheral bark of the twig is more than a ritual; it serves the essential purpose of crushing the very delicate newly formed tissues at the region of the cambium. As a result the entire central wood cylinder can be pushed out, leaving the bark intact as a hollow cylinder. Tempting as it is it would take us beyond our purpose to pursue further the gentle art of whistle making and virtuosity, including such fine points as raising and lowering the pitch by sliding the wood cylinder respectively toward or away from the fashioned "blow" end, reminiscent of a sliding trombone. But enough has been said to identify quite precisely in non-botanical terms what is bark, wood, and the location of the cambium.

The cambium, although completely encircling the wood cylinder, is minute in radial thickness. It may be envisioned as a microscopically thin and very delicate membranous tissue occupying precisely the boundry between the outer limits of the wood and the inner limits of the phloem (the latter the innermost region of the bark), with both of which it is at all times in the closest organic and living union. This position between wood and phloem is maintained throughout the life of the tree, whether the wood cylinder be a fraction of an inch in diameter or measured in yards as in a giant Sequoia. Thus, as the wood cylinder enlarges with growth the cambium moves out with it, constantly shifting its *absolute* postion. But it never changes its *relative* position—always does it occupy the boundary between wood and phloem. To do this it obviously itself must and does grow tangentially, accommodating itself perfectly to the steadily increasing circumference.

The justification for dwelling on the cambium is that it is responsible for nearly all growth in thickness of the trunk, indeed of limbs, branches, twigs, and even of roots. In the growing season its minute cells divide tangentially, each into two cells—an outer and an inner. The inner ones (next to the wood) may speedily grow into typical wood cells, in which case the outer ones remain as cambium cells; or the outer ones may grow into characteristic phloem cells, in which instance the inner ones remain as cambium cells. This process repeats itself many times during the growing season. Thus the cambium generates on its inner face additional wood (strengthening and water-conducting tissue) and on its outer side additional phloem (conducting tissue for elaborated foods), but always the vital cambium persists at the boundary between the two. Obviously, the most recently formed wood is always at the *outermost* limit of the wood, whereas the newest phloem tissue is always at the *innermost* limit of the phloem.

Actually the volume of additional wood generated by the cambium in a growing season is much greater than the volume of new phloem produced in the same period. Moreover, the wood produced by the cambium early in the growing season is in many species conspicuously porous (large cells) whereas the wood generated toward the end of the growing season is denser (smaller thicker walled cells). Thus when wood production starts in the spring, there is an abrupt transition from the dense wood produced late in the previous season to the porous wood generated early in the current season. In this manner are produced the well known "annual rings" of wood so conspicuous in many of our trees.

For present purposes another growth process is important which meanwhile is taking place in the bark (Fig. 17). The outer portion of the bark consists of a substantial layer of protective cork. This, too, is formed by a cambium—the *cork cambium* — located at the inner limits of the cork. Dividing tangentially much as the cambium cells, the outer cells so formed are converted into cork cells, the inner ones perpetuating the cork cambium. (The cork cambium generates a little tissue also on its inner face; however, for present purposes it is unimportant and needs not be traced further.)

Matured cork is a dead tissue. As such its cells cannot divide and grow to accommodate the cork to the constantly enlarging trunk circumference. In consequence the cork breaks in a great variety of ways, producing the surface bark configurations so characteristic of tree species: * These configurations are determined by anatomical and developmental facts which need not be detailed here. Deep vertical furrows and prominent firm ridges as in black walnut and tulip poplar, loose flaky scales as in apple and spruces, thin layers shed annually as in sycamore, vertical hanging plates as in shagbark hickories, etc., to mention only a few. Still other trees develop very little cork, the bark in consequence remaining thin and smooth with little or no shedding, as in beech, true firs, Carpinus.

With these facts in mind we return to the problem of attaching labels to trunks. Quite naturally the all but universal procedure is to drive screws or nails into the trunk, that is, through the bark and into the wood. This provides firm attachment, but it also invites trouble. A screw or nail so situated (Fig. 17 at B) is anchored at its far end in the wood. During the growing

(Continued on Next Page)

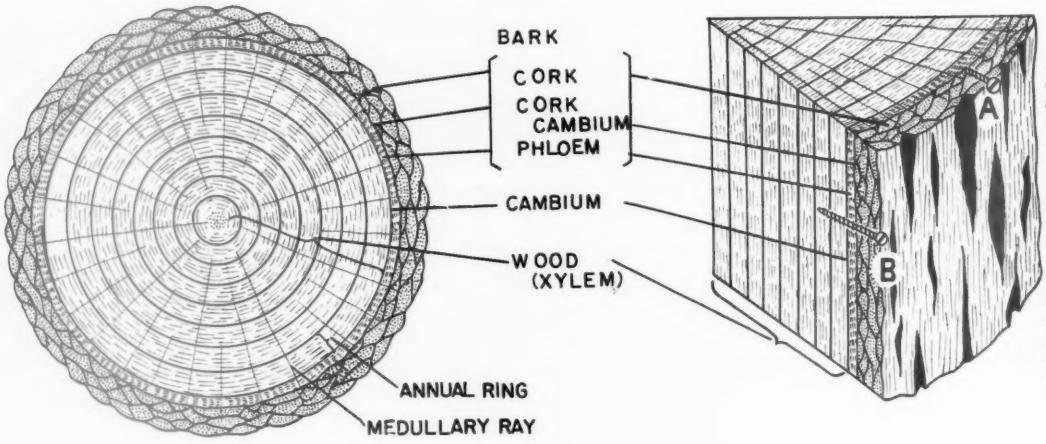


Fig. 17. Tree trunk eight years old showing schematically its three main regions: (1) wood or xylem; (2) the bark, consisting of cork, cambium, and phloem; and (3) the cambrium. Left, a cross section in two-dimensional view; right, a pie slice in three-dimensional perspective. — Drawing prepared by Dr. Hui-Lin Li, Research Associate of the Morris Arboretum.

season the cambium adds new wood and new phloem in the manner already described. This new tissue interpolated by the cambium pushes the bark outward. But the nail or screw, being firmly anchored in the stationary wood, does not move outward with the bark but maintains its initial absolute position. In consequence the nail or screw is eventually completely overgrown. And meanwhile the label is either pushed off over the head (Figs. 18 and 19) or, failing this, is also engulfed (Fig. 20).

Various procedures are used in attempts to mitigate these difficulties, such as periodic outward adjustment of the nail or screw to keep ahead of the encroaching bark. The adjustments to be effective must be made regularly; unfortunately they may be difficult if not impractical to make. The newly developing tissues are molded so intimately and firmly about the nails or screws that the latter, even if not corroded, are likely to be "frozen."

At the Morris Arboretum, too, decay has occasionally set in about nails and screws used in attaching labels. In some instances these have been very valuable—even unique—trees.

All in all, in restudying label design an attempt has been made to avoid the difficulties and hazards attending the traditional mode of attachment by screws and nails. Again referring to Fig. 17, a practical procedure at once suggests itself for trees with suitable bark which, although employing screws, avoids the above difficulties.

The screw at A is anchored wholly in the cork. The corks being dead, the screw at no time enters living tissues, thus avoiding the hazard of initiating decay. But more important, the screw is never in danger of being overgrown. All the new tissues formed by the cambium and the cork cambium are laid down within the innermost anchoring point of the screw. In screw B, on the other hand, the new tissues are wedged in *between* the tip of the screw (anchored in the wood) on the one hand and the head on the other. Since the anchor in the wood holds firm, the screw keeps its initial absolute position and eventually is engulfed. Screw A, on the contrary, rides outward undisturbed as the trunk grows, constantly shifting its *relative* radial position while keeping its initial position in the dead cork.

It is apparent that only on tree trunks with sufficiently thick, firm, and non-shedding cork is it practical to employ the label designed for screw attachment (Fig. 14). For trunks with cork not meeting these specifications, the corresponding label design (Figs. 15 and 16) avoids screws and nails altogether and employs instead a self-adjusting band encircling the trunk. The band attachment can be used as well on all trees for which the screw attachment is practical. However, since the latter is simpler to fabricate and many species have suitable cork, the screw-attached design is widely used in the Arboretum and is therefore included in the general descriptions that follow.

B. Trunk Label With Screw Attachment (Fig. 21)

a. *The Wood Label.*—For most purposes a locust wood block 3″ x 5″ (¾″ or ⅞″ thick) is adequate; larger sizes can be used where necessary. The engraving is done with a power router in letters 5/16″ or ⅜″ high — large enough to be easily read though the label is attached well above arm's reach. Besides its phenomenal durability, locust wood has another important advantage. Being very hard, the high speed routing bit scorches the sides and bottom of the channel as it cuts. The result is a durable charcoal inscription requiring no tinting.

b. *The Stainless Steel Attaching Strip.*—To the back of the label a strip

(Continued on Page 14)

Fig. 18. Lead label, attached by a nail driven into the wood, in process of being pushed off over the large nail head.

Fig. 19. Lead label pushed off over the head of its erstwhile attaching screw and fallen to the ground (resuspended for purposes of the photograph). The screw, anchored in the wood, all but completely engulfed by the bark.

BETTER TREES WITH THE BOLIVAR PIT

By F. L. Steve O'Rourke

Only a few short years ago the average "tree man" was little concerned with propagation. He was then too busily engrossed in developing methods which would preserve the magnificent old giants of the tree world for at least another generation. Suddenly, due to the rapid expansion of suburban areas, the growth of individually designed subdivisions, and the modern type of American home, the arborist became conscious of the need for trees not easily obtainable, particular trees of form and size to suit individual and specific locations.

No longer will seedling elms, maples, planes, and oaks fulfill all the planting needs. Trees of definite and special growth habits are required, trees that will maintain a characteristic size, shape, and structure throughout their entire life, and trees that will harmonize architecturally and ecologically with the area in which they are planted.

These trees must be propagated asexually from selected clones of known genetic constitution so that all the progeny will be exactly like the vegetative individual from which the cuttings, grafts, or buds were taken. Many trees, such as the oaks, maples, and beeches do not root well from cuttings and clonal forms must be propagated by grafting and budding. Others, like the poplars, willows, planes, some elms and locusts, and most shrubs root fairly easily from either hardwood or softwood cuttings.

A simple propagating device, known as the "Bolivar pit," which was developed in the tropics to root cuttings of cacao trees, may prove of value in rooting cuttings of many trees and shrubs of the temperature zone. As an excavation in the soil, the Bolivar pit takes advantage of the insulating power of the earth to prevent temperature fluctuations and consequent changes in humidity within the propagation facility.

The Bolivar pit consists merely of a hole in the ground containing the rooting medium, a burlap or cloth cover, and a rotary water sprinkler to keep the cover wet. It requires no electricity and only low water pressure. It is both cheap to construct and to maintain and has proven quite successful in producing rooted cuttings at a low cost.

The method takes its name from the Hacienda "Bolivar" in the cacao belt of Ecuador where it was first developed. The name also commemorates General Simon Bolivar, the Venezuelan patroit who led the armies of liberation throughout much of South America in the war for independence. The first pit as constructed by Mr. R. K. Malins-Smith, propagator at Hacienda "Bolivar," was circular in form. Later at the Tropical Agrictultural Experiment Station of Ecuador it was found that for large scale propagation a long rectangular pit divided into several individually operated sections was more cheaply constructed and more efficient to operate and maintain.

The Bolivar Propagation Pit at the Tropical Experiment Station in Ecuador.

The pit should either be excavated on a well drained area or tile drains should be provided. The earth is removed to a depth of 20 inches. A layer of gravel 6 to 8 inches deep is then placed in the bottom of the pit, followed by a thin layer of sand, and then 6 to 8 inches of a good rooting medium, such as fairly coarse sand, or a mixture of fibrous peat moss and sand. Wires are strung across the pit at ground level and strips of burlap or cotton cloth suspended on these. It is advisable to treat the burlap with a one per cent solution of copper naphthenate before using.

The pit may be made as wide as a rotary lawn sprinkler will disperse water but ordinarily 20 feet will be found sufficient. The rotary sprinkler is fastened from ¾" pipe about 3 feet above the center of the pit. A hand valve is located in a convenient place so that the sprinkler may be manually controlled. Maintenance consists only in keeping the burlap wet during the daylight hours.

A plank or a movable cradle suspended between two planks may be used when setting cuttings. In the tropics, however, the workmen usually work bare-footed and do not contaminate the rooting medium. As a section of the pit is set to cuttings, it should be immediately covered with wet burlap. When the setting is complete the burlap is drawn tightly across the pit and the strips should overlap so that there are no air spaces in the covering.

Maintenance of the Bolivar pit is quite simple. The attendant is merely instructed to keep the burlap wet at all times. Usually he can do this by turning on the hand valve for a minute or two every two or three hours. Naturally the hotter and brighter the day the more frequently the sprinkler should be operated. After the cuttings start to root the amount of water is gradually decreased with longer intervals between waterings. The cuttings may be "hardened-off" in the pit by gradually parting the burlap strips to let in light and air.

As with any other strange facility, the propagator must work with the Bolivar pit long enough to familiarize himself with its potentialities and method of operation. It has several distinct advantages over other facilities as it is cheap to construct, uses only inexpensive and easily obtained materials, does not require electricity nor high water pressure, and can be maintained with inexperienced help. In all probability individual propagators will add appliances or modify the facility to suit their own individual preferences and types of cuttings. Probably with suitable mulching many kinds of cuttings may remain in the pit over winter and be ready for early spring field planting.

Trees...

SUCCESSFUL TREE LEGISLATION

By Frank E. Karpick
Assistant Forester
City of Buffalo, N. Y.

The City of Buffalo, with an area of approximately forty-two square miles, and 640 miles of paved streets, has a tree population of about 300,000 trees.

Since the year of 1869, when the Park Commission was organized, the city has carried on a tree program of such magnitude that it can truly be called "A City of Trees." The Park Commission retained the services of Olmsted, Vaux & Co., to lay out the city's park system. Most of the city's parks and connecting system of parkways designed by them, have made it one of the outstanding in the country.

However, our city has made the same mistake that was made by other communities, and some are still making. In trying to follow the example set by the original planners, their successors have insisted in using, on narrow residential streets, the same kind of trees which these original planners had used on parkways, and this meant principally elms, and other large forest trees.

Many other trees were planted along the various sections of the city, the general rule being to plant one tree in front of each home. This would not have been a very bad rule to follow, if the home were built on the present day lots of fifty to seventy-five foot frontage. In those days, however, the people wanted to crowd as many homes into as small an area as possible, some of the lots being as narrow as twenty-five to thirty feet. In a great many instances, the property owners were not satisfied with one tree in front of their homes, which the city had planted, but insisted on planting one or two more. They were not particular as to the variety, poplar, willow, soft maple, sugar maple, ash, or even basswood were equally good in their opinion.

The Forestry department was organized in 1908, almost forty years after the beginning of the Park Commission. The department started with a great handicap. Trees have a way of growing, even with very little assistance from their neighbors—the humans. Funds for the operation of the department were set aside in the annual budget. From the beginning, the department did not ask for a great deal of money, perhaps because of lack of precedence or experience. As soon as the department learned what problems they were faced with, and a request was made sufficient to take care of the trees properly, their request was termed exorbitant, by the fund dispensing agency. Every so often, a depression would hit the city, and then the budget appropriation was pared to the bone.

Eventually, scientific knowledge on tree care became available. Insects and disease affecting trees were recognized and control measures had to be used. Power sprayers became a necessary adjunct in every forestry department. However, in spite of this additional care, the appropriations were not increased, so that the funds for this operation had to be taken from the regular maintenance program.

Then, as the cost of the labor became higher, some adjustment had to be made, but it was soon found, that any additional budget appropriation, usually just about took care of the increased cost of labor. So every year our back log of work increased. Neglect really took over!

Every year at budget time, we made requests for additional funds, in an effort to at least catch up with a fraction of the back log. The cry from the press and the public was always—"Economy"—and we all know that the public must be served.

Finally, we suggested that money for our tree maintenance work should be raised by bond issue. Here we received a very definite answer—that New York State, in common with a great many other states, has a law to the effect that all funds for all maintenance work must be obtained from regular annual budget allotment. So it looked like we were really "stymied." Apparently there was nothing that could be done about it.

Thus the situation continued until January 1, 1954. A new administration was elected to office. Mr. John A. Ulinski, who has always had the interest of the city trees at heart, and has been a firm believer in proper tree maintenance, was named to the office of Commissioner of Parks. He listened attentively while we unfolded our problem. He assured us that something can be done—and he did it!

Formerly, only the planting of trees was permitted in the financing policy of the State for municipalities. A TREE was considered a luxury, or ornamentation and not a necessity. While bonds were permitted for the repairs and repavement of streets and sidewalks, it was not permissible to raise money for the maintenance of trees. Virtually, there is a tree under city jurisdiction for each two persons in the City of Buffalo. A tree plays a vital part in the health of a city, because it lives on the waste gases of the present city life, besides adding appreciably to the value of its real estate. The legislature was convinced of the new role that the tree plays in the modern city.

Mr. Ulinski (Dem.) got together with our present Comptroller Chester Kowal (Rep.) and they agreed on our need. They formulated a plan, which the city comptroller took with him to Albany. After it was put into the necessary bill form, State Senator Stanley A. Bauer (Rep.) placed it in the legislative hopper, while in the Assembly, it was sponsored by Assemblyman John Lis (Dem.). Both of these gentlemen really pushed it in their respective houses, and as a result, it was passed. Senator Bauer then wrote a personal letter to Governor Averill Harriman (Dem.) telling him of the urgency of the bill, and asking him for his signature. Governor Harriman signed the bill, and it is now a law. I think that this is the greatest piece of legislative cooperation, I have ever heard of!

This law will now allow the municipalities in New York state to pay for the needed tree rehabilitation programs by bond issue. In this way our department will be able to give the trees the kind of care we have always hoped they should have.

The City of Buffalo has already taken advantage of this legislation. We have had a sum of money appropriated to start a comprehensive tree trimming program, and for this work contracts have been awarded to various contractors, who were interested in bidding on our project. These contracts were awarded to successful bidders, and the work on the first section is over 50 per cent completed. We hope to be able to continue this work, which seems to have the approval of all the individuals throughout the city, until all the trees have been properly taken care of, after which we hope to inaugurate a planting program, by planting selected varieties of trees, and thus prove that TREES can really be an asset to a municipality without being a menace.

Plant Propagators Society In Fifth Annual Meeting At Cleveland

The fifth annual meeting of the Plant Propagators Society will meet in Cleveland, Dec. 15, 16, 17 at the Wade Park Manor. The meeting is open only to members and guests.

The program, presented here, lists a fine group of subjects and speakers and has just been released by President Richard A. Fillmore and Vice President Edward H. Scanlon. The address of welcome will be given by past president Dr. L. C. Chadwick.

Program

WEDNESDAY EVENING, DEC. 14
2:00 P. M.-7:00 P. M.—*Registration*
THURSDAY MORNING, DEC. 15
8:00 A. M.—*Registration*
10:00 A. M.—*Address of Welcome,* Past Pres. P.P.S. Ohio State Univ.
Dr. L. C. Chadwick
10:30 A. M.—*Developing New Plants for Modern Gardens*
Dr. F. L. Skinner, Skinner's Nursery Ltd. Dropmore, Manitoba, Canada
12:00 noon—Luncheon
THURSDAY AFTERNOON, DEC. 15
1:30 P. M. to 4:30 P. M.—*Speaker-Exhibitor Symposium*
Moderator: Robert P. Meahl, The Pennsylvania State University, University Park, Pa.
The Bolivar Pit Method of Rooting Softwood Cuttings
F. L. O'Rourke, U.S.D.A., Point Four Program
(Presented by Robert P. Meahl)
Three additional member-speakers to be announced
THURSDAY EVENING, DEC. 15
8:00 P. M. to 9:30 P. M.—*Speaker-Exhibitor Symposium Continued*
Three member-speakers to be announced
FRIDAY MORNING, DEC. 16
9:30 A. M. to 12:00 noon—*Roundtable on Plants and Light*
Moderator: Dr. H. H. Borthwick, U.S.D.A., Bettsville, Maryland
60 min.—*Light and Plant Propagation*
Dr. H. A. Borthwick, U.S.D.A., Beltsville, Md.
45 min.—*Propagation of Chrysanthemums*
Vernon Gifford, Yoder Brothers, Barberton, Ohio
45 min.—Discussion and Breaks
12:00 noon—*Luncheon*
FRIDAY AFTERNOON, DEC. 16
1:30 P. M. to 4:30 P. M.—*Roundtable on Malus Propagation*
Moderator: Dr. D. S. Blair, Central Experimental Farm, Ottawa, Canada
45 min.—*The Propagation of Malus Spp.—a Survey*
Dr. D. S. Blair, Central Experimental Farm, Ottawa, Canada
25 min.—*Malus from Leaf Bud Cuttings*
Dr. S. H. Nelson, Central Experimental Farm, Ottawa, Canada
20 min.—*Malus Understocks from Seeds*
Author to be announced
Presented by—to be announced
45 min.—*Nursery Propagation of Malus by Budding and Grafting*
Robert C. Simpson, Simpson Orchard Company, Vincennes, Indiana
45 min.—Discussion and Breaks
FRIDAY EVENING, DEC. 16
8:00 P. M. to 10:00 P. M.—*Plant Propagation Question Box*
Moderator: Louis C. Vanderbrook, Vanderbrook Nurseries, Manchester, Conn.
SATURDAY MORNING, DEC. 17
9:00 A. M. to 12:00 noon—*Propagation and Production of Canned Nursery Stock*
Moderator: O. A. Matkin, Soil and Plant Laboratory, Orange, California
40 min.—*Propagation and Production of Canned Nursery Stock in California*
O. A. Matkin, Soil and Plant Laboratory, Orange, California
20 min.—*Research with Canned Nursery Stock in Ohio*
Philip Barker, Ohio State University, Columbus, Ohio
20 min.—*Canned Trees in Texas*
John B. Roller, Verhalen Nursery Company, Scottsville, Texas.
20 min.—*Canned Conifers in Illinois*
J. B. Hill, Hill Nursery Company, Dundee, Illinois
20 min.—*Canned Shrubs in Massachusetts*
Clifford Corliss, Gloucester, Mass.
60 min.—Discussion and Breaks
SATURDAY AFTERNOON, DEC. 17
1:30 P. M. to 2:30 P. M.—*Propagation of Asiatic Maples*
Roger G. Coggeshall, The Arnold Arboretum, Harvard University, Jamaica Plain 30, Mass.
2:30 P. M. to 4:00 P. M.—*Report on Mist Propagation*
Chairman: Dr. J. P. Mahlstede, Iowa State College, Ames, Iowa

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Northern Nut Growers Hold Annual Meeting

By Wilhelm M. Beckert

The 46th annual meeting of the Northern Nut Growers Association was held at Michigan State University at East Lansing, Michigan on August 29, 30 and 31st. One hundred, eighteen people registered for the three-day conference which was held at Kellogg Center, an ideal facility for such a conference. In the exhibit room on display were the named varieties of black walnuts, Carpathian (English) Walnuts, chestnuts, Filberts, Japanese walnuts, heartnuts and hickory nuts. Many of the growers brought along large samples from their better trees and during the meeting many informal evaluations of samples took place.

During the business meeting it was voted by the members to hold next year's meeting at Yale University on August 28, 29 and 30.

Professor F. L. (Steve) O'Rourke was welcomed back from his work in South America. Professor O'Rourke was the director of the Tropical Experiment Station at Guayquil, Ecuador. He gave an interesting account of his experiences, showed colored slides that pertained to the topography, people, and methods of propagating the cacao and coffee trees. Of special interest was the beneficial effect of mulch when the young trees were planted out in the plantation. Mulching is a new practice for that part of the country.

Louis Gerardi, nurseryman, Caseyville, Illinois reported that the named varieties of black walnuts and Carpathian (English) Walnuts are becoming more popular in landscape planting. The demand for grafted trees of named varieties has increased each year.

During the panel discussion of seedling chestnut trees vs. grafted chestnut trees it was agreed that the grafted trees were of prime importance for the orchard grower. A uniform product is a necessity for the commercial grower. Dr. J. W. McKay, USDA Beltsville, Maryland, stressed the point that, high producing trees of good quality nuts are only produced by grafting, either in the nursery row or seedlings trees topworked in the orchard. The homeowner in many cases would be satisfied with a seedling tree since he isn't planning a commercial operation of harvesting the nuts.

Mr. Spencer Chase of Knoxville, Tennessee read the report of the Carpathian (English) Walnut varieties. In most cases the trees have been observed only for a short time, but the future looks promising. Most of the trees are hardy during the winter, but some leaf out too early in the spring, so that they are subject to frost damage in the late spring. It was agreed that more trees should be observed, careful records kept so that the individual trees could be compared more closely. Also more hybrid seed should be planted by the members so that trees having the desirable characteristics of both parents might eventually be obtained.

Other papers were presented at the meeting which will be published in the proceeding of the association.

At the banquet, Dr. T. D. Stevens, head of the Department of Forestry, Michigan State University, was the guest speaker, his subject "Forestry in Germany."

The local arrangements committee of which Professor Forrest C. Strong, Michigan State University, was chairman, was given a standing ovation. The elections of officers which closed the formal part of the meeting at which time the present officers were re-elected: Professor George L. Slate, Geneva, New York, President; Gilbert Becker, Climax, Michigan, Vice-President; Professor William S. Clarke, Jr., State College, Pa., Treasurer; and Spencer B. Chase, Knoxville, Tennessee, Secretary.

The last day of the conference was spent at the Michigan State University Biological Station at Gull Lake, near Battle Creek, Michigan.

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July 28, 1955

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District Plant Superintendent

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Labels

(Continued from Page 8)

of steel is attached by a single centrally placed screw. This strip is so designed that within certain limits the label can be kept horizontal whatever the angle of the trunk or large limb to which it is attached.

c. *Fastening The Label To The Trunk.*—Attachment of the assembled label to a favorable cork ridge is effected by two screws of a length not penetrating beyond the cork. In some species with thin but very firm cork, e.g. red oak, ¼" screws are holding well, though they are not recommended except in such very favorable cases. One naturally uses the longest screws that the cork will accommodate; however, it has not seemed necessary to exceed ¾".

d. *Performance.*—Some hundreds of these screw labels have been in use for the past eight to twelve years. During this period the labels on an occasional tree came loose because the nature of the cork was misjudged. In 1953 all were critically examined—the first systematic inspection since installation. In a few, slightly larger screws were substituted, the original ones having loosened (or rarely the labels were shifted to neighboring cork ridges). In other instances the screws, while firm in the cork, were tightened slightly. But the great majority required no adjustments whatever. A new type of screw has now been adopted (details in the appendix) which will reduce still further the number and frequency of adjustments.

In no case did the label itself show any deterioration. As expected on anatomical and developmental grounds, pushing off or overgrowth of labels was completely absent. And in no instance had decay been initiated in the tree. Using good judgment initially in selecting only trees having suitable cork, one such inspection in a minimum of five years should keep the screw labels in excellent order. For the hundreds of these labels in the Arboretum scattered over some 75 acres the inspection at the end of eight to twelve years of service required the time of one person for about two days. All adjustments were made on the spot. No label required replacement or other attention indoors, and it is expected that this will continue to be so for decades.

Fig. 20. Label attached by a nail driven into the wood. In this case the lead label was not pushed off over the nail head; instead, it was folded back on itself by the growing trunk and is in process of being swallowed up.

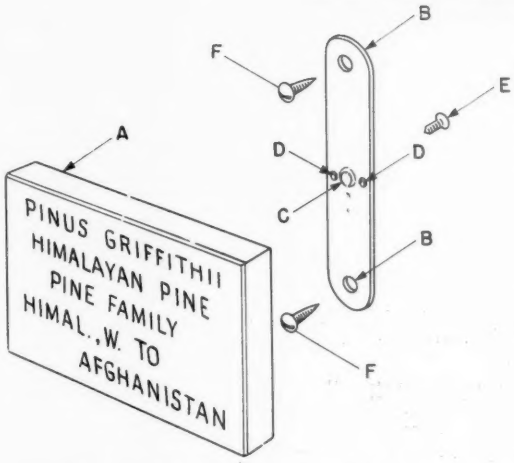

Fig. 21. "Exploded" view of trunk label design for attachment to the cork. A, inscription-bearing black locust wook block. To the right, the stainless steel attaching strip B: C, countersunk hole for attaching strip to block by screw; D, D, countersunk holes, the projecting burs fixing the strip at the desired angle with reference to the block when screw E is tightened; B, holes for screws F, F, anchoring the assembly to the bark (screws do not penetrate beyond the cork). — Drawing Courtesy H. L. Yoh Company, Inc., Philadelphia, Pa.

C. Trunk Label With Self-adjusting Band
(Fig. 22)

(Continued on Page 18)

DOW

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San Joaquin Valley Region Western Chapter National Shade Tree Conference

The third annual San Joaquin Valley Meeting of the Western Chapter of the National Shade Tree Conference, was held October 28th and 29th, 1955. The evening meeting of the conference was held in the recently completed Science Building, McLane Hall, on the new campus of Fresno College, at Cedar and Shaw Avenues, Fresno, California. The affair which drew 85 people from all parts of the San Joaquin Valley was sponsored jointly by the Horticulture Club of Fresno State College and the San Joaquin Valley Section of the California Association of Nurserymen.

S. H. "Syd" Whitehorn, controller for the California Association of Nurserymen and owner-manager of the Sierra Nursery and Seed Co., Fresno, California, was the moderator for the evening. Mr. Whitehorn opened the meeting by stressing the importance of shade trees in the San Joaquin Valley. He pointed out that shade trees of the proper kind and type can reflect 85% of the heat of the sun and reduce ground temperatures by 35 degrees. He then introduced Mr. Wm. H. Henderson, owner-manager of Henderson's Experimental Gardens. Mr. Henderson, a student and associate of the late Luther Burbank, spoke on "Trees for your Yards and Streets." He discussed many new and old trees suitable for our modern homes and cities. He illustrated those by slides and sample of foliage to emphasize his remarks.

Mr. Fred P. Roullard, for many years Agricultural Commissioner for Fresno County and later instructor in Pathology and Entomology at Fresno State College, presented an illustrated lecture on "Identifying Diseases and Pests of Shade Trees." Mr. Roullard drew from his long and varied experiences to present his subject. He emphasized the importance of understanding the pests and diseases to which shade trees are subject, which together with a thorough knowledge of the growth and development of trees give a firm basis for controlling them.

Mr. J. D. LaBonte presented the safety film "Look Up and Live," which the Pacific Gas and Electric Company is using to help the public realize the importance of safety where high power electrical current is used.

Mr. Allan H. Reid, Palo Alto Landscape Architect and President of the Western Chapter, National Shade Tree Conference, brought greetings from the Western Chapter.

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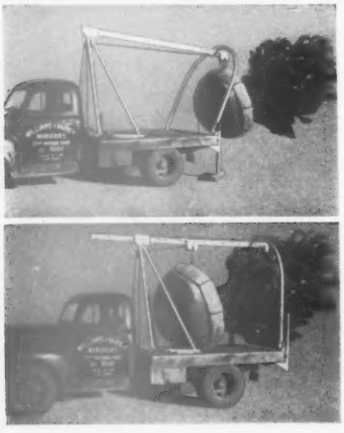

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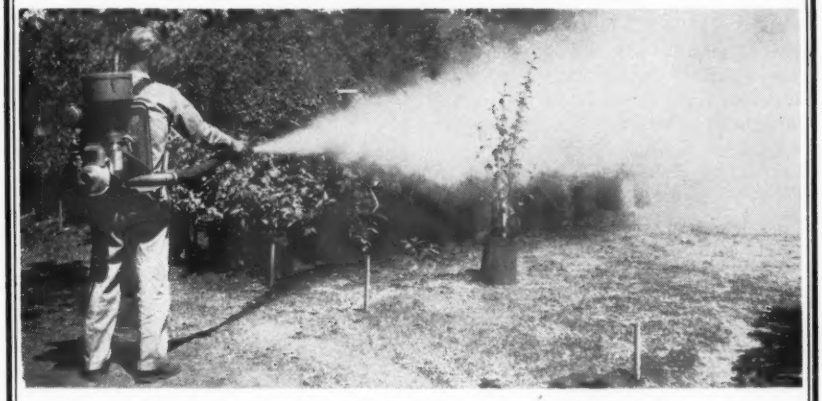

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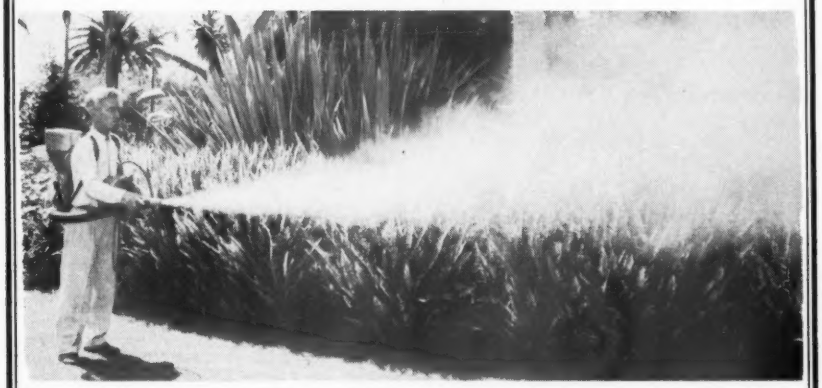

The Kiekens Whirlwind Knapsack Mist Sprayers and Dusters are Finely Machined Precision Instruments Built To Give Service. Filling A Long Needed Place in Mist Sprayer Technique.

Sportsman Is Battling Elm Disease

ANN ARBOR—The man who tried to bring the Olympic games to Detroit has declared war on the creeping death of the Dutch elm disease.

Frederick C. Matthaei, wealthy Detroit industrialist and sports enthusiast, has a personal stake in the battle—the 60,000 elm trees that populate his Washtenaw county estate.

But more than that, Matthaei says, it's essential that the disease be beaten and one of Michigan's best shade trees saved. It will take the cooperation of everyone.

The cost is high. Matthaei estimates that it would cost about $100,000 a year to control the disease in Washtenaw county alone. He lost 33 trees in 1953, 152 trees last year and 79 trees so far this year.

To help battle the fungus that is carried by two different varieties of beetles, Matthaei has set up a laboratory in Detroit where tree segments can be analyzed. It is one of only two laboratories in the entire state.

Meanwhile Matthaei has a six-man crew working on his estate to study the problem, spray healthy trees and destroy infected ones.

He was instrumental this year in getting the state legislature to increase its funds for the fight against the Dutch elm fungus from $28,000 last year to $74,500 this year.

The money will go for spraying trees to destroy the parasite-carrying beetles. But it will take more than money.

Matthaei says that one community alone cannot stop the disease. It will take the cooperation of the county, the state, the neighboring states, and their neighboring states, to stop the creeping death. To point up his feeling, Matthaei adds:

"I have walked through cities in the nation where there are no trees. It is a terrible feeling."

COMING EVENTS

The Plant Propagator's Society, Cleveland, Ohio. Wade Park Manor Hotel. December 15-17, 1955.

Michigan Landscape Conference, Michigan State University, East Lansing, Michigan. Kellogg Center, January 5 and 6, 1956.

The Indiana Arborists' Association, Purdue Memorial Union, West Lafayette, Indiana, January 9-11, 1956.

New York State Arborists' School, Syracuse, N. Y., Hotel Onandaga, January 16 and 17, 1956.

Ohio State University Short Course for Arborists, Landscape Gardeners and Nurserymen, Neil House Hotel, Columbus, January 16-18.

Connecticut Tree Protective Association, Hartford, Conn., Hotel Stalter, January 17, 1956.

National Arborist Association, Cincinnati, Ohio. Netherland Plaza Hotel, January 30 and 31, 1956.

Midwestern Chapter, N.S.T.C., Chicago, LaSalle Hotel, February 22-24, 1956.

National Shade Tree Conference (32nd Convention), Toronto, Canada, August 20-24, 1956.

You Saw the Ad in TREES

Labels

(Continued from Page 14)

a. *The Wood Label.* — The wood label is in all respects indentical with the preceding, the difference in this design being wholly in the mode of attachment. Though developed originally for trees lacking bark suitable for screw attachment, it is practical on nearly all trees five inches or over in diameter and can therefore replace the screw label if desired.

b. *The Attaching Device.* — The principle of the attaching mechanism is apparent from Fig. 22. To the back of the wood block is fastened a steel strip, again by a single centrally placed screw. To one end is anchored a ½" steel band long enough to reach nearly around the trunk. To the other end is attached a ¾" band of sufficient length almost to encircle the trunk in the opposite direction. The wider band is prepunched with opposing and staggered lugs, forming a channel within which the narrower band slides. With the narrower band threaded under the lugs of the wider one, a length of stainless steel spring joins the two bands into a single system and puts the entire assembly under sufficient tension to hold it securely in position on the trunk.

As the trunk grows and exerts pressure on the encircling composite band, the latter adjusts itself automatically through the sliding of its two component bands, though always kept under tension by the spring. Throughout, the lugs keep the elongating spring in position on the midline of the wider band. And as the spring is extended more and more the tension increases, so that continued snugness of the encircling band is assured.

Even if it were practical on other grounds, which it is not, to achieve the same automatic adjustment by simply using a stainless steel spring encircling the trunk, it often would fail because of overgrowth. A spring lying directly on the bark exerts its entire pressure in the narrow line along which it touches the bark. This highly localized pressure, increasing as the spring is stretched, eventually stimulates the underlying living tissues, especially in thin-barked trees, to overgrow the offending spring. When, on the other hand, the spring lies on the steel band the same pressure is distributed evenly over the entire area under the encircling band. So distributed the pressure nowhere becomes sufficient to stimulate the slightest abnormal growth.

As a byproduct, the band device serves as a very fair dendrometer. The position of the free end of the narrower band is recorded by a vertical lead pencil mark on the wider band, adding the date and year (Fig. 22, N).* Annually thereafter, or at other desired intervals, the new position of the end of the narrower band is similarly recorded (Fig. 22, N_1) the distance between the two being the circumferential growth during the interval. (If a forester's diameter tape is used, circumference measurements are read off directly in term of diameter increment.) When bands are first attached to trees, conformity to the trunks is not perfect and some slack remains. Usually one year's growth takes up all this slack, after which movement of the end of the band is a measure of circumferential growth. In very slow growing trees it may be safer to wait two years before recordings are begun.

Lead pencil for these records is recommended advisedly. The surface of the stainless steel is microscopically pitted and takes pencil marks admirably. Based on 15 years' observation weather is totally without effect on such records. However, they can be removed easily with an ordinary rubber eraser. This is not without significance, because out-

(Continued on Page 21)

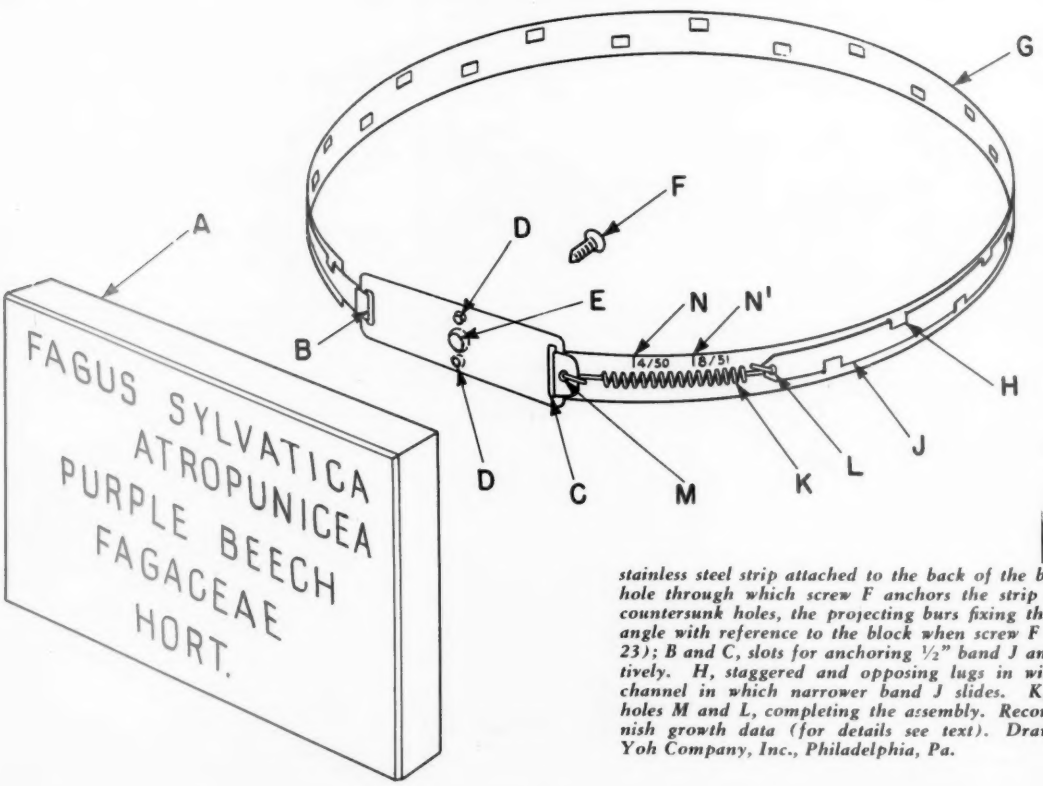

Fig. 22. "Exploded" view of tree label attached by self-adjusting band encircling the trunk. A, inscription-bearing black locust wood block. Just beyond, the stainless steel strip attached to the back of the block: E, countersunk hole through which screw F anchors the strip to the block; D, D, countersunk holes, the projecting burs fixing the strip at any desired angle with reference to the block when screw F is tightened (see Fig. 23); B and C, slots for anchoring ½" band J and ¾" band G respectively. H, staggered and opposing lugs in wider band G to form channel in which narrower band J slides. K, spring anchored in holes M and L, completing the assembly. Records at N and N_1 furnish growth data (for details see text). Drawing Courtesy H. L. Yoh Company, Inc., Philadelphia, Pa.

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Many other excellent species and varieties are included in the fine array of practical trees from which you finally have an opportunity to select a tree that will fit the space you have available. This is the first and only nursery ever to specialize in trees designed specifically for the all important correct embellishment of streets.

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TREE TALK

The list of meeting dates of shade tree organizations given on page 17 is evidence that a lot will be said about trees during the next few weeks. Most of these meetings are within the trade and those who will attend and take part in the discussions will be persons with some occupational interest in shade tree preservation. The meetings are not primarily for the tree-owning public.

Judging from past experience the attendance at these various shade tree meetings will be very good. Everyone who attends with the objective to learn something will not be disappointed. When you listen and enter into the discussion and associate with others whose interests are the same as yours, you are sure to take home something of value. The "bull sessions" are often the best parts of a meeting. It is in these little groups where talk is friendly, informal and plentiful that you really find out things.

Attendance at some of these tree-talk festivals will do you a lot of good. In addition to valuable information you will receive a mid-winter boost in morale with respect to your job.

In speaking of talk about trees, I have been impressed with the excellent job being done by many garden writers. The garden sections of city newspapers and garden magazines present a wealth of tree information to the public. It is from the columns of garden writers that the average home owner learns about species of trees to plant, use of trees in the landscape, care of trees, and the control of disease anu insect pests of trees. The garden writers are doing a real service and deserve our thanks and cooperation.

Transmission of Oak Wilt

In early investigations of the oak wilt disease by plant pathologists it was found that the casual fungus readily moved from one tree to another through root grafts. This means of transmission accounted for the successive dying of oak trees of the same species in a limited area where root unions occurred, once oak wilt was introduced. A new oak wilt location some distance from any other wilt diseased tree could not be accounted for on the basis of root grafts. It was evident that other means of transmission existed in nature.

Continued research has gradually added information and several possible means of oak wilt transmission have been demonstrated. Several species of sap beetles, an oak bark beetle and the common fruit fly are all attracted by the fruit-like odor of fungus mats below the bark of oak trees killed by wilt.

NAA NEWS

By PAUL E. TILFORD, *Secretary*
Box 426, Wooster, Ohio

It has been demonstrated experimentally that spores from the fungus mats can be carried on the bodies of these insects to healthy trees. Any wound which exudes sap on an oak is attractive to insects of this type. The insects feed on the fungus mats formed on a wilt-killed tree pick up spores and later if they feed on sap exuding from a wound on a healthy oak, they may inoculate the tree with the oak wilt fungus.

Recently pathologists at the Illinois Natural History Survey have reported using both gray squirrels and fox squirrels to transmit oak wilt experimentally. It seems that squirrels, like insects, enjoy eating the fungus mats and will tear holes in the bark of dying trees to get at the mats. It has been shown that if the squirrel gnaws on a healthy oak tree soon after feeding on an oak wilt fungus mat, the disease may be transmitted.

In each case of oak wilt transmission demonstrated thus far, except through root grafts, the vector obtains inoculum from the fungus mats which form under the bark of wilt-killed oaks. Removal and destruction of trees with oak wilt before the fungus mats are produced will eliminate this source of inoculum and constitutes an important control measure.

Big Trees Are Moved

There is a large amount of interest atttached to the moving of a big tree. Arborists with big tree-moving experience enjoy telling about the jobs they have done and the rest of us like to listen. The public is usually interested and not only watch the operation but keep an eye on the patient afterward to settle the inevitable question, "Will it live or will it die?"

To move a big tree and soil ball from its original location, perhaps over soft ground, to the new site, place it in the hole at the right depth, have it straight and keep it that way, is an engineering feat. To protect the newly transplanted tree from borers, sunscald and get it to grow is a horticultural accomplishment. Once the transplanted tree becomes established it is the pride of its owner and stands as a monument to the ability of the arborist who moved it.

The Orange Leader, newspaper of Orange, Texas, issue of November 1, reports the moving of a Magnolia having a trunk diameter of 21 inches and a limb spread of 45 feet. The tree was moved for H. J. Lutcher Stark by the Blume System Tree experts of Houston, from an old homesite to the grounds of Mr. Stark's Lumber Company.

H. M. Van Wormer, Richmond, Virginia, assisted in the moving of the magnolia.

In October a large Cut Leaf Weeping White Birch was moved from Gardener, New York, to the Old Wind Mill Estate at East Hampton, Long Island, by Arboreal Associates, Harriman, New York. The tree had been located some months ago after a long search and this past spring had been root pruned and fertilized and was watered during the summer to condition it for moving.

A. G. Heflin, of Heflin and Storms, Wyckoff, New Jersey, supplied the tree mover and assisted with the actual moving of the birch. Heavy rains during operation increased the difficulties but did not prevent a successful moving operation.

We trust these two tree patriarchs will survive their operations.

Thanksgiving

One week from the date this is being written will be Thanksgiving Day. Truly all of us are thankful for many things.

First, we are thankful to live in this country where there is freedom of speech and freedom of action—freedom to do what we choose. This is a privilege denied to millions of people living in some other parts of the world.

Then, we have friends and loved ones for which we are thankful; life would be a drab experience without friends.

Most of us have had good business and good jobs for the past several years and we are thankful for that. Business in general has been on a very high plane. People have had money to spend on the care of their trees and in improving the landscaping of their homes and cities. There seems to be every indication that prosperity will continue next year and for some time into the future. When other businesses prosper the tree business is good. As arborists we, individually, may have some business gripes but certainly in general we are thankful for good business, good jobs and good prospects ahead.

Before this is printed, Christmas probably will have passed. We are thankful for Christmas and for its significance to mankind.

Each of us could prepare a long list of things for which we are thankful individually. We are a fortunate people.

Labels

(Continued from Page 18)

grown bands can be reused on smaller trunks where again they can furnish dendrometric data free from confusion with earlier records.

One other secondary advantage the band-labeled tree has: it proclaims the welcome information that it is in fact labeled, whatever the direction from which the visitor approaches it.

*If preferred, the position of the free end of the wider band can be recorded on the narrower band.

c. *Performance.*—Some hundreds of the band labels have been in use for from 7 to 12 years. In the earliest ones the spring anchors were improperly designed and in some cases disengaged. With improved design no further such difficulty been been experienced. In three cases the bands failed to function after several years, and for interesting reasons. In an Eastern White Pine, snow breakage several years after the label was installed necessitated removal of branch stubs above the level of the label. Resin poured from the wounds, running down the tree and over the bands. When the volatile matter had evaporated the bands were "frozen" in the solid residual rosin and unable to move. After a time trunk growth tore the wider band loose from its attachment. In a parallel case on a Norway Spruce badly diseased with Cytospora canker, copious resin exudation similarly resulted in "frozen" bands. In the third case (Cercidiphyllum) the band was so placed that at one point it lay in the upper acute angle made by a major branch with the trunk. When the bark of the enlarging branch made contact with the thickening trunk in this narrow angle, the band was caught in a vise. Aware of this possibility in certain species, it is easily avoided by properly locating the band.

Fig. 23. Label firmly fixed in horizontal position whatever the angle of the trunk or limb to which expanding band is attached. For details see Fig. 22.

Not until 1953 when the screw labels were inspected were all the band labels likewise critically examined. No other functional difficulties were found, and no deterioration either in the labels or the attachment mechanism was detected, nor does any seem in prospect. The only attention required — in a few rapidly growing trees—was the replacement of the outgrown bands (the component bands disengaged or about to be disengaged at their free ends by the growth of the trunk) with a new spring and band assembly of appropriate length. As in the screw labels, no sign of overgrowing or other induced abnormal growth was detected. And as would be expected from the mechanical principle of the band, no other injury of any kind had occurred.

(To be continued)

Owosso Buys Machine To Scare Birds

OWOSSO, Mich. 1954—This city now has its own "bird frightener." Tuesday it purchased a starling-scare device from a New York company to rid the residential district of the swarms of starlings that are making life miserable for home-owners.

The city tried out the device, which features an amplified phonograph recording of a starling "in distress," and found out it worked. It bought the new machine for $400.

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6. A product processed, based on 30 years proven continuous operation, has a ph of 4.5 to 5.5, that is quickly, easily and economically adjusted to needs of any plant material.
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Authors and Books

The following books may be ordered from TREES Magazine, 7621 Lewis Road, Olmsted Falls, Ohio.

GERANIUMS FOR HOME AND GARDEN, by Helen K. Krauss. The Macmillan Co., New York. 194 pgs., illus. $5.00.

More complete and more up-to-date than any book yet published on the subject, Mrs. Krauss's volume accurately describes nearly a thousand different kinds of geraniums. The sixteen pages of photographs and the color plate make it possible for the gardener, by comparison, to identify about a hundred of these thousand kinds.

An informative introduction, which includes useful tips for beginning geranium growers, precedes the plant descriptions. The concluding section of the book is a thorough and immensely helpful guide to geranium cultivation. It includes soil requirements, planting techniques, propagation, hybridization, pruning, and effective measures for disease and pest control. Geraniums in east and west, indoors, in the garden, and in the small home greenhouse are all given consideration.

The author shows herself unusually adept at letting the reader sense the individual character of each species and cultivar (horticultural variety) she mentions. The groups which are easily visualized by the amateur gardener are set apart in her treatment: the well-known garden geranium in a surprising range of colors; the handsome, easy-to-grow ivy-leaved trailers; the elegant, fancy-flowered plants of the "Lady Washington" type; and the appealing and varied scented-leaved geraniums. Each of these major classifications is divided into distinctive color groups to facilitate identification. Mrs. Krauss then concludes her descriptions with an intriguing chapter on rare and unusual types—the "aristocrats, oddities, and curiosities."

The geraniums of this book (which to the botanist are all members of the genus Pelargonium of the Geranium family) have been a favorite flower for indoor and outdoor culture the world around for more than two centuries. Mrs. Krauss has studied them in many quarters of the globe, including the original species seen growing wild only in South Africa.

* * * *

PLANT PROPAGATION PRACTICES, by James S. Wells. The Macmillan Co., New York. 344 pgs., illus. $7.50.

For research in practical new methods of plant propagation, few names are better known than that of James S. Wells. His articles in "The American Nurseryman" magazine have become basic guides for large-scale growers everywhere. His experiments with constant mist, with hormones, and with fertilizers have contributed measurably to the establishment of new nursery procedures.

In *Plant Propagation Practices* he both summarizes and amplifies his former writing. The practices he describes are applicable to any project in which large quantities of plants are to be propagated—as for parks, forests, cemeteries, large estates, or highway borders.

Mr. Wells begins with lucid answers to the three basic questions which the young nurseryman will ask: where, when, and how to start a propagating unit. Special emphasis is given to choosing the site, and there is an excellent review of types of propagating structures and their equipment.

In his discussion of the principles and fundamental procedures of propagation, Mr. Wells provides a wealth of information on water, heat, and light requirements, on shading, on methods of handling seeds and cuttings, on wounding and hormones as aids in the rooting of cuttings, on humidification and the use of constant mist. He also gives complete directions for grafting, layering and division, for control of pests and diseases in propagating, and for preparing propagated material for field planting. His comprehensive discussion of soils and other media for plant growth includes instructions for mixing the John Innes composts which are so widely used in England.

Eighteen plants which are basic to the average nursery business have been chosen by the author for detailed treatment as to methods of propagation. Among these the chapters on azaleas and rhododendrons are of special interest, because these are plants on which Mr. Wells has done notable research.

The next, which is a lucid, step-by-step analysis of the author's own methods for propagation of nursery plants, is admirably supplemented by nearly 100 photographs and diagrams. At the end there is a helpful month-by-month outline of standard propagating activities. Sources of commercial products and propagating literature mention in the text comprise an ample appendix to the volume. There is a comprehensive index of 900 entries.

Mr. Wells is a former president of the Plant Propagators Society and has contributed several fine papers which have been published in the proceedings of the Society.

* * * *

CROP PROTECTION, by G. J. Rose. Philosophical Library, 15 East 40th St., New York 16, N. Y. 223 pgs., illus. $10.00.

This book is written for the cultivator—whether large or small—faced with the problem of protecting his crops.

It is a practical guide to the protection of crops from the initial seed stage to the stored product. In addition it is an aid to the planning of an intelligent programme of measures for combating insect pests, fungus diseases, and competing weeds.

The various kinds of chemical preparations available are fully described, including the most recent insecticides, fungicides, and weed-killers. Each chemical is considered in the light of its value to the grower. The range of application equipment marketed to-day is discussed, and emphasis is laid on the factors to be considered before any particular system of pest control is adopted.

The book is divided into the following sections:

Section 1. General considerations, cultural control, the type of formulations available, dusts, baits, smokes, fumigants, solutions, emulsions, suspensions.

Section 2. Devoted to chemicals, weed-killers, insecticides, fungicides, rodenticides.

Section 3. Describing application machinery, including dusting systems, spraying systems, injection systems. The choice and operation of equipment.

Section 4. Deals with the protection of stored products.

* * * *

ROPE KNOTS AND CLIMBING. TREE PRESERVATION No. 7, by the late A. Robert Thompson. Revised 1955. Superintendent of Documents, U. S. Govt. Printing Office, Washington, D. C. 15 cents.

It is hardly necessary to call attention to this fine work published originally around 1938 by Bob Thompson. It is essentially the same as the original, except for some minor revisions. The heavy demand for these fine Bulletins has resulted in a number of printings of which this is the latest.

* * * *

ROOTING HOLLY CUTTINGS IN A WINDOW BOX, (Circular 97), by Roger W. Pease, West Virginia Agric. Exp. Station, Morgantown, W. Va.

This is an excellent guide for the small grower of Holly with little space in which to indulge in a fascinating hobby. Many useful tips are available that will help the commercial grower as well. Professor Pease is a widey known authority on Holly culture.

* * * *

ILLINOIS TREES: THEIR DISEASES, by J. Cedric Carter, Illinois Natural History Survey, Circular No. 46. Urbana, Ill.

This book of 99 pages, well illustrated, is a valuable contribution by Dr. Carter to the arborist as well as the home owner with small trees not requiring the services of large spray equipment. Because the species found in Illinois are pretty generally distributed throughout the midwest and northeast, the book will have appeal throughout this area. It brings the treatment of many leaf, twig and vascular disorders up to date.

The Singing Chain Saw

McCulloch Motor Corporation's chain saws are singing their way to new business.

Believed to be the first in the chain saw market to sport its own jingle, the McCulloch chain saw now comes with words and music.

Ham Nelson, radio-television director for McCulloch's advertising agency, Stromberger, LaVene, McKenzie, worked with song writer Keva Marcus on the job. Here's a sample of the lyrics which are sung to a square dance style original melody:

Verse:

No more muscles achin' sore
With my McCulloch balanced saw
I'd rather live with my mother-in-law
Than live without my McCulloch saw

Chorus:

You're in luck when you've got a McCulloch chain saw
You've got power by the hour in your hand
With McCulloch you're the master
'Cause you keep a-cuttin' faster
You're in luck when you've got a McCulloch chain saw.

Both recordings and sheet music (complete with a variety of verses) are made available by the company to McCulloch dealers. Reports have it that the jingle is rapidly climbing to top place on the Woodman's Hit Parade!

Work Gloves

Work gloves that will outlast conventional gloves by better than two to one are among the latest contributions of nylon. The gloves are made of heavy duty canton flannel of cotton strengthened with 50 per cent nylon. Tests made where glove wear is severe show 21 to 38 per cent greater lasting qualities.

—Hort. Newsletter

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